CLAIMS

1. A method of dehydrogenating triisopropyl benzene in a vapor phase at an elevated temperature in the presence of steam and a solid catalyst to produce diisopropyl isopropenyl benzene, isopropyl diisopropenyl benzene and/or triisopropenyl benzene, characterized in that said solid catalyst is mainly composed of an iron compound and a potassium compound.

2. The method according to claim 1, wherein triisopropyl benzene is 1,3,5-triisopropyl benzene.

3. The method according to claim 1 or 2, wherein the solid catalyst is mainly composed of an iron compound, a potassium compound and a magnesium compound.

4. The method according to any one of claims 1 to 3, characterized in that the solid catalyst comprises at least one compound selected from the group consisting of alkali metal compounds, alkaline earth metal compounds, rare earth metal compounds, molybdenum compounds, zirconium compounds, zinc compounds, manganese compounds and copper compounds.

5. The method according to any one of claims 1 to 4, wherein the temperature of the dehydrogenation reaction is between 480 and 650 °C.

6. The method according to any one of claims 1 to 5, wherein the feed amount of the steam which is fed together with the raw material triisopropyl benzene is between 5 and 80 times in weight ratio as large as the feed amount of the triisopropyl benzene, in the dehydrogenation reaction.

7. The method according to any one of claims 1 to 6, wherein the feed amount of the triisopropyl benzene is between 0.01 and 1.4 on LHSV.

8. The method according to any one of claims 1 to 6, wherein the feed amount of the triisopropyl benzene is between 0.01 and 1.0 on LHSV.

9. A method of dehydrogenating triisopropyl benzene in a vapor phase at an elevated temperature in the presence of steam and a solid catalyst to produce diisopropyl isopropenyl benzene, isopropyl diisopropenyl benzene and/or triisopropenyl benzene,
characterized in that said solid catalyst is mainly composed of an iron compound and a potassium compound,
and in that a combination of a reaction period and a catalyst regeneration period is made by feeding triisopropyl benzene intermittently,
in said reaction period, two components of the triisopropyl benzene and the steam contacting with the solid catalyst, and in said catalyst regeneration period, only the steam contacting with the solid catalyst.

10. The method according to claim 9, wherein the feed amount of the steam in the reaction period and the catalyst regeneration period is between 5 and 80 times in weight ratio as large as the feed amount of the triisopropyl benzene in the reaction period.

11. The method according to claim 9, wherein oxygen or air is employed in the catalyst regeneration period, instead of steam.

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12. The method according to any one of claims 9 to 11, wherein the feed amount of the triisopropyl benzene is between 0.01 and 1.4 in liquid hourly space velocity LHSV.

13. The method according to any one of claims 9 to 11, wherein the feed amount of the triisopropyl benzene is between 0.01 and 1.0 in liquid hourly space velocity LHSV.

14. The method according to any one of claims 9 to 13, wherein the solid catalyst is mainly composed of an iron compound, a potassium compound and a magnesium compound.

15. The method according to any one of claims 9 to 14, wherein triisopropyl benzene is 1,3,5-triisopropyl benzene.

16. The method according to any one of claims 9 to 15, characterized in that the solid catalyst comprises at least

one compound selected from the group consisting of alkali metal compounds, alkaline earth metal compounds, rare earth metal compounds, molybdenum compounds, zirconium compounds, zinc compounds, manganese compounds and copper compounds.

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17. A method of dehydrogenating diisopropyl benzene in a vapor phase at an elevated temperature in the presence of steam and a solid catalyst to produce isopropenyl cumene and diisopropenyl benzene,
characterized in that said solid catalyst is mainly composed of an iron compound and potassium compound,
and in that a combination of a reaction period and a catalyst regeneration period is made by feeding diisopropyl benzene intermittently,
in said reaction period, two components of the diisopropyl benzene and the steam contacting with the solid catalyst, and in said catalyst regeneration period, only the steam contacting with the solid catalyst.

18. The method according to claim 17, wherein the feed amount of the steam in the reaction period and the catalyst regeneration period is between 3 and 60 times in weight ratio as large as the feed amount of the diisopropyl benzene in the reaction period.

19. The method according to claim 17, wherein oxygen or air is employed in the catalyst regeneration period, instead of steam.

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20. The method according to any one of claims 17 to 19, wherein the feed amount of the diisopropyl benzene is between 0.01 and 1.4 in liquid hourly space velocity LHSV.

21. The method according to any one of claims 17 to 19, wherein the feed amount of the diisopropyl benzene is between 0.1 and 1.0 in liquid hourly space velocity LHSV.

22. The method according to any one of claims 17 to 21, wherein the solid catalyst is mainly composed of an iron compound, a potassium compound and a magnesium compound.

23. The method according to any one of claims 17 to 22, wherein diisopropyl benzene is meta-diisopropyl benzene, and isopropenyl cumene and diisopropenyl benzene are meta-isopropenyl cumene and meta-diisopropenyl benzene, respectively.

24. The method according to any one of claims 17 to 22, wherein diisopropyl benzene is para-diisopropyl benzene, and isopropenyl cumene and diisopropenyl benzene are para-isopropenyl cumene and para-diisopropenyl benzene, respectively.

25. The method according to any one of claims 17 to 24, characterized in that the solid catalyst comprises at least one compound selected from the group consisting of alkali metal

compounds, alkaline earth metal compounds, rare earth metal compounds, molybdenum compounds, zirconium compounds, zinc compounds, manganese compounds and copper compounds.

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